Executive Development (R123)

EFOP Applied Research Self-Study Guide

Table of Contents

Overview

Introduction   As an Executive Fire Officer Program (EFOP) candidate you must complete an Applied Research Project (ARP) as the post course requirement for each of the four courses in the EFOP. You will receive valuable research instruction during the *Executive Development* course. Come to the course with three possible (your organization) problems for your research project. **Completion of this Research Self-Study course will help prepare you for the course and will be a <u>valuable resource to write your ARP</u>. Important issues are in bold.**

The ARP Schedule of Events

1.   At the conclusion of each EFOP course, you will receive the ARP Proposal Form with your evaluator's name and address.

2.   Within 2 weeks after the completion of the course, you should e-mail your completed Proposal Form to your evaluator.

3.   Your evaluator will return feedback on your proposal within 14 days.

4.   Within 6 months of course completion, submit your ARP to the National Fire Academy (NFA); send three hard copies and one disc copy, in Microsoft Word or WordPerfect, using a traceable mailing system.

Basic ARP Criteria   Your ARP's must be your own original work. They must present new data that **you** have discovered; and critical thinking about the objective facts that you have discovered also must support the new information you present. Your ARP's must develop applied research findings that will be useful to your organization and are related to the content of the course you just completed.

In addition, your research will relate to one or more of the following United States Fire Administration (USFA) Operational Objectives:

1.   Reduce the loss of life from fire in the age group 14 years old and below.

2.   Reduce the loss of life from fire in the age group 65 years old and above.

3.   Reduce the loss of life from fire of firefighters.

4.   To promote within communities a comprehensive, multi-hazard risk-reduction plan led by the fire service organization.

5.   To respond appropriately in a timely manner to emerging issues.

Overview (continued)

How Will This Course Help Me?

This course has been developed by the NFA to provide you with specific skills that will be critical to successful completion of the research component of the *Executive Development* (ED) course and the four ARP's required in the EFOP. **You should identify three organizational problems for your ARP before you attend ED.** The self-study course will help you answer the following questions:

- Applied research and the benefit to my organization and the fire service?

- How do I select a topic and research methodology?

- What information should I include in each section of an ARP?

- When and how do I use the *EFOP Operational Policies and Procedures*?

- When and how do I use the *American Psychological Association* (APA) *Manual*?

- How do I cite references correctly in my ARP?

Course Materials

This EFOP Research Self-Study Course consists of a Study Guide and Workbook. To get the greatest benefit from this course, the Study Guide and Workbook should be used with the *Publication Manual of the American Psychological Association* (*APA Manual*). Although the course provides numerous examples and describes exceptions to the *APA Manual*, the *APA Manual* will be your key resource. You should also become familiar with the *EFOP Operational Policies and Procedures* booklet for specific policy guidance regarding the EFOP and the ARP requirement.

Course Exam

The Research Self-Study Course examination will test your knowledge of the content of the Self-Study Guide. The instructions for completing the Research Self-Study Course exam will be included in your pre-course materials. Each student must successfully complete the exam with a score of at least 70 percent prior to the first class day of the *Executive Development* course.

Overview (continued)

Course Exam
(continued)

Due to the pre-requisite nature of the Research Self-Study Course, students will not receive a separate certificate of completion. This course is designed for students who have previously been selected into the EFOP.

The course exam is focused toward the following objectives. We encourage you to reflect back on these objectives as you proceed through the course and prepare for the exam. There are 7 objectives with 5 exam items per objective, for a total of 35 exam items.

1. Give the rationale for including a research requirement in the EFOP.

2. Define applied research as creating new data or new information.

3. Identify the characteristics of each research methodology.

4. Identify the required elements of the ARP and the type of content that needs to be included in each section.

5. Distinguish between ARP elements that follow the *Publication Manual of the APA*, those that follow the *EFOP Operational Policies and Procedures*, and those that are addressed in the Research Self-Study Course.

6. Follow APA format to correctly insert references in the body of a research report text.

7. Follow APA format to construct referenced citations for books, magazines, journal articles, newspapers, Web articles, audiovisual presentations, telephone and in-person interviews, and direct observations.

**How to Take
This Course**

This course is self-paced, so you can complete it at your own speed. We anticipate that it will take a maximum of 8 hours to complete, but you will benefit most if you do not rush through it in one sitting. We suggest that you go to the Workbook at the points suggested in this Student Study Guide to review the topics covered. If you have difficulty in doing an activity, return to the Study Guide and review the material.

Module 1: What is the Purpose of the Applied Research Project Requirement?

What is Research?

Research is investigation and/or experimentation aimed at the discovery and interpretation of facts. Research documents "successes" (new discoveries, new insights, new applications, etc.), so that others also can profit from them. It also documents "failures" (ideas that sounded good but never caught on, attempts to initiate new procedures that backfired, etc.), so that others can avoid making the same mistakes.

Basic research is undertaken for the function of theory development or refinement (Gay, 1987). "Applied research is conducted for the purpose of applying, or testing, theories and evaluating their usefulness in solving problems" (Gay, 1987, p. 541). Your ARP's will be "applied" research; you will be using one of four research methodologies to solve practical problems.

How Has Applied Research Benefited the Fire Service?

The efficiency and effectiveness of the fire service have been greatly improved over the past decades by the application of research findings to the day-to-day work in all aspects of the fire service. Fire suppression, fire prevention, and Emergency Medical Response teams all have benefited from improved equipment, techniques, and management initiatives developed through applied research.

The application of research findings has improved our understanding of fire dynamics; provided data on preventing fires by improving the fire safety of the built environment; documented impacts of fire effects on building occupants and provided new insight into the behavior of people in fire; developed technology to reduce injuries through improved firefighter equipment; and, developed decision-making tools to improve the effectiveness of fire service organizations.

Why is Research Important to You as a Fire Professional?

Every profession has a unique body of knowledge on which it is based and which sets it apart. The body of knowledge is advanced, amended, and increased through diligent research and experimentation within the profession. The quantity and quality of the research directly affects the perceived "professionalism" of the occupational group.

Module 1: What is the Purpose of the Applied Research Project Requirement? (continued)

Why Does the EFOP Include a Research Requirement?

The applied research component of the EFOP was established to recognize the importance of research to the fire profession and to encourage Executive Fire Officers (EFOs) to participate in research.

The applied research component has several goals:

- To give EFOs opportunities to use critical thinking skills to develop new data or new information that can be applied to improve the efficiency and effectiveness of their own organizations.

- To disseminate through NFA to the fire community at large the new data or new information that EFOs identify.

- To help EFOs to use the new data or new information from their research to recommend changes to decision makers in their communities.

- To ensure that EFOP graduates have the professional judgment needed to make decisions about the credibility and relevance of research findings presented to them by others.

- Problem solving is one of the most critical competencies required to succeed as an EFO. The APR will help develop your problem solving skills toward implementation of solutions in your jurisdiction.

What is an Applied Research Project?

The ARP in the EFOP is designed to allow students to research a key issue or problem that has been identified as being important to their fire service organization. Upon completing the research, students will be able to reach conclusions and offer recommendations that contribute to the improvement of their organization.

Through this process, students have an opportunity to translate what they have learned in each EFOP course into real-world applications. By writing the ARP in a professional paper format, EFOP students are contributing to the fire service literature.

Module 2: How Do I Select the Appropriate Research Topic and Methodology for an Applied Research Project?

How Do I Select an ARP Topic?

Applied research topics (problems) should be selected on the basis of four factors:

1. The author's individual interests.

2. The relationship of the topic or issue to the EFOP course content.

3. The significance or value of the topic and/or issue to your organization.

4. The relevance of the topic or issue to U.S. Fire Administration (USFA) operational objectives.

Take care to select a topic that can be **completed within the 6-month** timeframe. The following questions should assist you in selecting your project topic:

1. Does the topic relate to the EFOP course most recently completed?

2. Is the topic worth researching; will it contribute to your organization?

3. Will it be possible to implement the recommendations?

4. Is there sufficient data available to do the research?

5. Does the topic or issue relate to and support one or more of the five USFA operational objectives?

How Do I Submit My Research Proposal?

For each course completed, EFOP participants are provided a research proposal form while completing their EFOP course. The form will contain the name and address of a contract evaluator who will be assigned to review the proposal form. The same evaluator will be the individual to whom NFA will forward the EFOP participant's ARP upon completion. You can download the research proposal form from the EFOP Web site at: http://www.usfa.fema.gov/training/nfa/efop/applied-research/

Module 2: How Do I Select the Appropriate Research Topic and Methodology for an Applied Research Project? (continued)

How Do I Submit My Research Proposal? (Continued)

When the EFOP participant returns to his/her jurisdiction, the research proposal should be completed and forwarded to your assigned evaluator; the evaluator has 2 weeks to respond. The form contains the proposed title, problem statement, purpose statement, research questions, research method, and research approach. The evaluator will review this information and provide general feedback to the EFOP participant regarding the proposal. (Note: The form will not be graded. Only general feedback will be provided regarding the quality of the research design proposed.) It is not necessary for the EFOP participant to provide a copy of the form to NFA, as the evaluator will submit it when invoicing NFA for this task.

The purpose of this step is to assist the EFOP participant in a critical phase of the research process: creating a realistic problem statement; matching the problem statement with the purpose; writing research questions that, if answered, will result in data to accomplish the purpose; and the necessary procedures to facilitate achieving the purpose and impacting the problem statement.

REMINDER: **Please submit the completed Proposal Form directly (e-mail) to your assigned evaluator. Do not submit to NFA. The completed ARP should be sent directly to NFA, not to the evaluator.**

General Submission Considerations for Evaluation

When a student submits an ARP, NFA expects it to be in **final form**; that is, the ARP will be a finished product. In no instance should a student submit an ARP that is incomplete, in draft form, or grammatically incorrect. NFA expects quality performance on the part of EFOP students. The written ARP report should be organized according to the ARP Guidelines. ARP's normally range between 20 and 30 typed pages (double-spaced), excluding reference list and appendices. However, due to the complexity of a research topic, an ARP may be greater than 30 typed pages and considered acceptable. NFA expects students in the EFOP to be capable of expressing themselves in a correct and effective manner. It is important that the papers demonstrate high professional quality because each is a research into a student's organization and major contribution to fire service literature.

Module 2: How Do I Select the Appropriate Research Topic and Methodology for an Applied Research Project? (continued)

**General
Submission
Considerations
for Evaluation**
(continued)

Three hard copies and a disk copy of the project must be submitted to NFA.
Please do not use permanent binding on your submitted project. A staple
in the upper left corner is sufficient. Disk copies of ARPs should be formatted
in one of the following word processing formats:

- Microsoft Word (preferred format) or

- Word Perfect

Disk copies should be labeled to include the following information:

- Student Name
- ARP Title
- Course
- Submission Date
- Word processing format

ARP's should be submitted to the following address:

> **National Fire Academy**
> **16825 South Seton Avenue**
> **ATTN: Executive Fire Officer Program Research Project**
> **Emmitsburg, Maryland 21727**

Students are strongly encouraged to use a traceable mailing system, i.e.,
Return Receipt Requested--U.S. Postal Service, FedEx, etc., and to maintain a
backup copy of both paper and disk. **The Academy is not responsible for
projects not received on the NETC campus.**

**Checklist
Evaluation
Criteria**

ARPs will be evaluated on 10 separate components. See sample Checklist on
pages 11 and 12 below. Note: The sample Checklist on the following pages is
for reference only; actual forms will be attached by NFA to all ARPs when
they are forwarded to the evaluator. **Each component has specific criteria
by which it will be graded.** When an evaluation component is also a required
section of the paper (i.e., the first eight components), **no credit** will be given
unless a section with that title is included in the paper. **ARP's must receive a
passing grade (2.0 or greater) in each section** to be considered an
acceptable or passing ARP.

Module 2: How Do I Select the Appropriate Research Topic and Methodology for an Applied Research Project? (continued)

Sample Checklist (Part 1)

Checklist Evaluation Criteria (continued)

ABSTRACT
_____ Accurate and self-contained.
_____ Primarily written in past tense.
_____ Problem statement defined.
_____ Purpose statement defined.
_____ Research method defined.
_____ Research question(s).
_____ Procedures summarized.
_____ Results summarized.
_____ Recommendations summarized.

INTRODUCTION
_____ Problem statement clearly and precisely defined.
_____ Purpose precisely and clearly stated.
_____ Specific research method identified.
_____ Research question(s) clearly stated (for historical, descriptive, evaluative, or action research only).

BACKGROUND & SIGNIFICANCE
_____ Clear and complete background analysis of problem provided.
_____ Sufficient evidence provided to justify study from an organizational perspective, based on past, present, and probable future impact on organizational effectiveness.
_____ Definitive linkage established between the research problem and specific content area(s) of the relevant EFOP course.
_____ Definitive linkage established between the research problem and one of the five USFA operational objectives.

LITERATURE REVIEW
_____ Sufficiently comprehensive.
_____ Findings of others reviewed.
_____ Summary statements provided on how the findings/observations of others influenced the project.
_____ Sources are current.

PROCEDURES
(Historical, Descriptive, Evaluative, and Action Research)
_____ Procedures sufficiently delineated to permit replication.
_____ Procedures appropriate to achieve stated purpose.
_____ For surveys, definition of total population provided; if used, process for selecting a sample described in detail.
_____ Limitations noted.
All of the above, plus:
_____ Appropriate statistical analyses selected and justified.
_____ Statistical significance of results documented.

Module 2: How Do I Select the Appropriate Research Topic and Methodology for an Applied Research Project? (continued)

Sample Checklist (Part 2)

Checklist Evaluation Criteria (continued)

RESULTS
_____ Results/findings clearly and concisely stated in narrative form.
_____ Detailed results of all procedures provided.
_____ Specific answers to original research questions provided or explanation of whether or not original hypothesis was supported by results, as appropriate.
_____ Comprehensive analysis of data included.
_____ Tables and/or figures are clearly presented, correctly labeled, and contain appropriate data.
_____ Final product(s) of action research included as an Appendix.

DISCUSSION/IMPLICATIONS
_____ The relationship between the study results and specific findings of others is discussed, using extensive citations from reference documents.
_____ Author's interpretation of study results is presented.
_____ Organizational implications of results clearly stated.

RECOMMENDATIONS
_____ Recommendations logically flowed from the results.
_____ Recommendations were supported by the data collected.
_____ Recommendations related to the stated problem and purpose.
_____ Recommendations provided for the organization and for future readers.

CONTENT (Note: This is not a section of the paper; rather it refers to the technical content of the entire paper.)
_____ Theories, principles, and procedures were presented and used properly.
_____ Information and data is accurate and up-to-date.

WRITING
_____ Correct grammar, punctuation, spelling, sentence structure, and typing/editorial style.
_____ All required sections of paper included.
_____ Reference lists and in-text references documented properly using APA Guidelines.
_____ Title reflects nature of study; correct title page format followed.
_____ Table of Contents included all major headings; a list of tables provided if more than one used; and Appendices were listed and defined.
_____ Certification statement signed and included.

Module 2: How Do I Select the Appropriate Research Topic and Methodology for an Applied Research Project? (continued)

How Do I Select an Appropriate Research Methodology?

In carrying out your research, you can use one of several methods. Which one you select will depend on the purpose statement to your research problem. Sometimes there will be a degree of overlap, but because each method is designed to answer a different type of question, most research uses one identifiable method.

Understanding the differences between the research methodologies has been a source of confusion for some EFOP students. This course will help you to distinguish among the research methodologies you can use to carry out your research, and the kinds of research problems for which each research method is appropriate. This will help you when you are ready to match your research purpose to an appropriate research methodology.

This self-study course discusses the four research methods that NFA prefers that you use in your ARP's.

- The Historical Research Method

- The Descriptive Research Method

- The Evaluative Research Method

- The Action Research Method

The Historical Research Method

Historical research requires studying, understanding, and explaining past events. Its purpose is to arrive at conclusions concerning causes, effects, or trends in the past that may explain present events and anticipate future events.

Module 2: How Do I Select the Appropriate Research Topic and Methodology for an Applied Research Project? (continued)

The Historical Research Method (continued)

The focus of historical research is on analyzing the past (usually limited to a specific time span) to:

- Explain the present situation and/or anticipate the future.

- Explain how past events/trends have influenced or caused a present situation.

Example: EFOs have followed historical research methods to:

- Identify the effects of National Fire Protection Association (NFPA) 1500, *Standard on Fire Department Occupational Safety and Health Program* on the department since its adoption in 1987.

- Define in-service training trends from 1980 to the present.

The Descriptive Research Method The Historical Research Method

Descriptive research requires the collection of data to answer questions concerning the current status of the subject of the study--how things are at the present time.

The focus of descriptive research is on determining and reporting the present status of something to clarify and report on the way things are at the present time. It can involve the following:

- Detailed observation and documentation of what is happening presently.

- Assessing attitudes or opinions about individuals, organizations, events, or procedures, using questionnaires, observations, or interviews.

Example: EFOs have followed descriptive research methods to:

- Describe what firefighters do now, in a typical 24-hour shift (e.g., what percent of their day do they spend on emergency runs, training, inspections, meals, sleeping, physical fitness, report writing, leisure activities, etc.).

- Identify public opinion on an upcoming bond issue.

- Describe employee satisfaction with department management.

Module 2: How Do I Select the Appropriate Research Topic and Methodology for an Applied Research Project? (continued)

The Evaluative Research Method

Evaluative research is the systematic process of collecting and analyzing data to make decisions. Evaluative research is appropriate if you want to analyze and evaluate a specific process, method, program, technique, etc., in order to:

- Determine whether or not to continue it.

- Identify needed improvements in it.

Example: EFOs have followed evaluative research methods to:

- Evaluate the effectiveness of recruit training.

- Evaluate the quality of service provided to a community.

Tip: If you use the evaluative method you must present objective measurement of data to standard(s), regulation(s), etc., in terms of statistics and data analysis, or comparisons of "before and after" to evaluate program effectiveness. Without such measurement, your research will not be considered evaluative.

The Action Research Method

Action research is the application of new information, theories, or methodologies to an actual organizational problem or need. If you use the action research method, your ARP must include the new product or process that you developed for implementation in your organization.

Action research is appropriate if the focus of your research is on:

- Solving an existing problem in your organization.

- Improving some aspect of present performance in your organization.

- Implementing an innovation in your organization.

Module 2: How Do I Select the Appropriate Research Topic and Methodology for an Applied Research Project? (continued)

The Action Research Method (continued)

Example: EFOs have followed an action research methodology to:

- Develop a new officer training program.

- Develop and implement a strategic community outreach plan for the department.

Tip: Action research requires that you develop and implement in your organization a product or process, which must be submitted with your ARP. Taking an action such as implementing a survey, an action that could be a part of any ARP, does not make your project action research. You must develop a unique product that can be put into action in your own organization.

Figure 1 summarizes the criteria to use to determine what methodology is appropriate to a specific type of research problem.

Figure 1. Criteria for selecting a research methodology.

If the research problem involves…	Then use this research method
Analyzing the past to explain the present	Historical
Describing a current situation	Descriptive
Analyzing and evaluating data to make a decision	Evaluative
Taking immediate action to solve an existing problem in your organization	Action

Self-study check
This would be a good point to go to the Workbook and review the content covered so far, using Self-Checks 1, 2, and 3.

Module 3: What Should I Include in Each Section of My Applied Research Project?

The required elements of your ARP are three items of front matter; six items that constitute the main body of the ARP; and two items of back matter. Figure 2 shows the organization of an ARP. The sections that follow Figure 2 discuss the contents of each element.

Figure 2. Elements of an applied research project.

Front Matter	ARP Main Body	Back Matter
• Title Page • Certification Statement * • Abstract • Table of Contents *	• Introduction • Background and Significance • Literature Review • Procedures • Results • Discussion • Recommendations	• Reference List • Appendices **Note:** For Action Research your product must be included in the Appendix.

* **The Certification Statement (p. A-1) and the Table of Contents (p. 19) are exceptions to the *APA Publication Manual*, samples of the two elements are in this Student Study Guide.**

The Title Page The Title Page will be the cover page of your ARP. Your title should be a concise summary of the main topic of your paper. It should contain keywords that searchers can use to access your paper in a library or online. A sample Title Page is shown in the *APA Manual* on page 306.

The Certification Statement Beginning in September 2003, a "certification statement" is required for insertion within every ARP. This statement is to be signed and inserted immediately following the title page. Please refer to page A-1 for a sample of this form.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

The Abstract   The Abstract starts on the next page after the Title Page.

Although it is the first page of your ARP, you will write it after your research report is complete, because it will be a summary of your entire report.

Your Abstract should be no **longer than 120 words**.

Tip: To check your word count in Microsoft Word™, click on "Tools," in the Toolbar; then click on "Word Count."

Like the Title Page, the Abstract should contain keywords that will help readers to locate your report easily in a library collection or online.

The Abstract should give enough information about your ARP to allow readers to determine quickly whether they want to read the entire report. In your Abstract, you should summarize briefly using:

Evaluation Criteria

- **Accurate and self-contained**
- **Primarily written in past tense**
- **Problem statement defined**
- **Purpose statement defined**
- **Research method defined**
- **Research questions defined**
- **Procedures summarized**
- **Results summarized**
- **Recommendations summarized**

The Abstract **does not** include citations to references consulted.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

The Table of Contents   The Table of Contents starts on the page after the Abstract. A sample Table of Contents is shown in Figure 3.
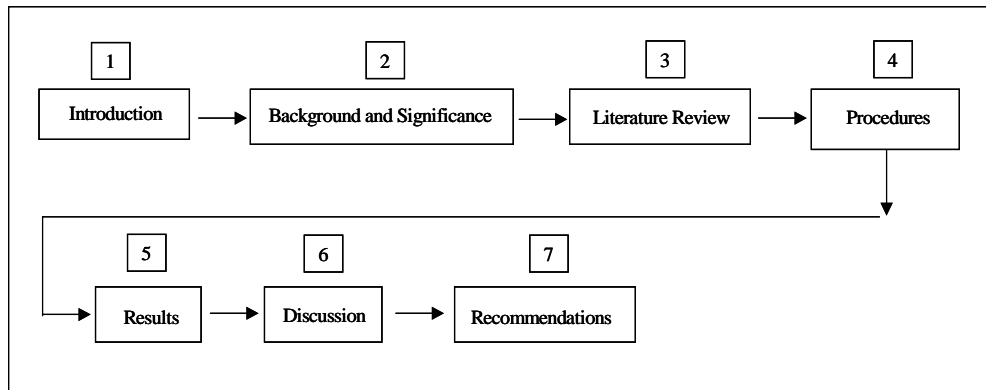
Figure 3. Sample table of contents.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

The ARP Main Body

The main body of your ARP will have seven sections. Figure 4 graphically illustrates the steps in the development of an ARP.

Figure 4. Steps in applied research project development.

Step 1: Introduction

Start the Introduction on the page after the Table of Contents.

A note about format: The Introduction is the only one of the seven sections of the main body of the ARP that starts with a new page. **It will have the ARP title centered with a line space and section name, Introduction, centered with a line space. This is an exception to the APA sample on p. 307.** Start the other sections without page breaks, **unless** only the next section heading or the heading and one line would be at the bottom of the page.

> *Tip:* To eliminate this possibility, when you begin typing your ARP in Microsoft Word™, click on "Format," then "Paragraph," and then on "Widow/Orphan Control."

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 1:
Introduction
(continued)

The Introduction sets the stage for your ARP. **After reading the Introduction, the reader should have a clear understanding of the nature of the problem** that led to your research, the purpose of the research, the research method you used, and the questions your research addressed.

In the ARP Introduction:

- Write a general statement introducing your ARP topic. For example: The United States workforce is among the most gender and racially diverse in the world. (Cite references to substantiate this.)

- Write a general statement that relates your first statement to the fire service. For example: The fire service workforce is one of the least diverse in the country. (Cite reference.)

- Write a general statement that explains why this is a problem. For example: Because the fire service does not reflect the diversity of the communities it serves, it has difficulty in providing the best service to these communities. (Cite references.)

- State your research problem. For example: The problem is Anytown Fire Department operates in a diverse community, but it has not been successful in recruiting a diverse workforce that reflects the demographics of Anytown, MD. This is affecting communication between the fire personnel and the people they serve.

- State your research purpose. For example: The research purpose is to identify recruiting efforts in other urban fire departments to determine what types of recruitment efforts have been successful in recruiting a diverse workforce.

- State your **research questions.** For example: The research questions are (a) what programs have been initiated in urban fire departments to promote gender, racial, and ethnic diversity, (b) how do these programs promote the recruitment of women, (c) how do these programs promote the recruitment of racial and ethnic minorities, and (d) what are the characteristics of recruitment programs that have successfully recruited women and minorities?

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

**Step 1:
Introduction**
(continued)

Evaluation Criteria:
- **Problem statement precisely and clearly defined.**
- **Purpose of the applied research project precisely and clearly stated.**
- **Specific research method used in the study identified.**
- **Research questions clearly stated.**

**Step 2:
Background
and
Significance**

In the next step in developing your ARP, you will discuss the background of the problem your research addresses. **You need to explain in this section what has been happening; why your research effort is worth doing; and how it can lead to a solution of the problem.**

In the Background and Significance section:

- Explain why the problem you identified is a **serious problem in your organization.** Provide pertinent organizational data relevant to the problem, such as the size of the fire department, its location, its workforce, the community it serves, or other information that establishes the context for the problem. Then describe the impact of the problem. For example, describe how lack of diversity in your fire department impedes communication with the community in fire prevention efforts, in EMT activities, and in fire suppression activities. How long has this been a problem? What previous efforts have been made to solve it? What brought it to people's attention? If it's a new problem, what instigated it? Who is involved? Does this problem reduce the ability of your organization to achieve its mission? Is this a problem only in your organization, or are there implications for other organizations?

- Explain why the problem is important to you.

- Explain the past, present, and probable future impact of this problem on your organization. For example, explain that language and cultural communication barriers, already problems, will become more critical because the immigrant population is growing.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 2: Background and Significance (continued)

- Explain the relationship of this problem to the content of the specific EFOP course you are completing. For example, a major goal of the *Executive Development* course is to focus the attention of EFOs as leaders on transforming fire and emergency services to reflect the diversity of the fire communities.

- Explain how this problem is related to the USFA mission, e.g., loss of life from fire can result from inability of fire service personnel to communicate quickly with the people they serve.

Evaluation Criteria

- **Clear and complete background analysis of the problem provided.**
- **Sufficient evidence provided to justify the study from an organizational perspective, based on past, present, and probable future impact on the organizational effectiveness.**
- **Definitive linkage established between the research problem and specific content area(s) of the relevant EFOP course.**
- **Established linkage to one of five USFA operational objectives**.

Step 3: Literature Review

No one does research in a vacuum. Research builds upon past knowledge provided by other researchers who have worked on problems similar to the one your research addresses. **Your literature review places your problem in the context of an existing body of knowledge.**

In your literature review section, **you summarize the findings of others who have published research related to your research problem and you explain how this information influenced your own research.** You also can see what kinds of measuring strategies and instruments have been productive in investigating your problem. This may suggest approaches for your research that you might not have considered.

The conclusions of other researchers will also help you in reporting your own results. You will be able to report in the Discussion section of your ARP on how your findings agree, or disagree, with the findings of previous research.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 3:
Literature
Review
(continued)

Your literature review section also can include information you obtain from interviews and correspondence with experts who provided specific information relevant to your research questions. A research project has a literature review for three reasons:

- To find out what others have said or done previously that relates to your problem.

- To provide other perspectives and contrasting views of the problem, and give you additional ideas about possible ways to approach it.

- To avoid duplicating research that has already been done.

> *Tip:* **Your Literature Review should be targeted, not rambling or unfocused. Include only findings that are relevant to your research questions, but be sure to include a minimum of three citations for each research question.**

Use Primary Sources

In developing your literature review, **you must go to primary sources**. These are first-hand information, such as the testimony of an eyewitness, an original document, or a study written by the person who conducted it. An ARP written by another EFO would be a primary source, but the literature review and reference list would not be. Interviews you conducted with experts who have first-hand experience related to your problem would be primary sources, but a discussion of some else's interview would not be.

Do Not Use Secondary Sources

A secondary source is a second-hand account, for example, a description of an incident by someone who did not actually witness it; a description of an original document by someone who did not write it; or a summary of a study by someone other than the author of the study. **Secondary sources are not acceptable in an ARP.**

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

**Step 3:
Literature
Review**
(continued)

> *Tip:* If you have not examined the work yourself, you cannot use it as a reference

Use a Variety of Sources

You are expected to expand your literature search beyond only fire service-related sources. Look for information on how private industry and public and nonprofit organizations are dealing with the problem you identified. You also can discuss interviews you conducted with experts in these organizations who have had direct experience related to your problem.

Be objective. **Include contrary opinions in your literature review. Your literature should show the reader that you have considered all opinions.**

Narrow the Literature Review

Avoid the temptation to include findings that relate only peripherally to your topic; cite only primary sources that directly relate to your research questions. Keep to the point. Remember that your ARP is expected to be from 20 to 30 pages long and the Literature Review is only one element. It should show that you know about what other researchers have reported about the problem you plan to research.

Identify Relevant Topics and Keywords

Start your literature review by making an initial list of topics associated with each of your research questions. (You can add other topics later.)

Begin your literature review for each topic with the broadest references, and then narrow it, so that you end with the references that are most closely related to your research question. Thus, you might start with the topic, "programs to recruit minorities and women," and end the section with a reference that directly addresses recruitment programs to promote diversity in fire departments.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 3:
Literature
Review
(continued)

For example, if one of your research questions is:

What are the characteristics of firefighter recruitment programs that promote diversity?

Your list of topics and keywords might include

Topic: Recruitment programs established to promote diversity in government.
Keywords: recruitment, government, diversity

Topic: Recruitment programs established to promote diversity in the military services.
Keywords: recruitment, military, diversity

Topic: Programs established to promote recruitment of women into nontraditional jobs in industry.
Keywords: recruitment, women, nontraditional jobs

Topic: Programs established to promote recruitment of women into the fire service.
Keywords: recruitment, fire service, women

Topic: Programs established to promote recruitment of minorities into the fire service.
Keywords: recruitment, fire service, minorities.

Self-study check
This would be a good point to review, using Self-Checks 4 and 5 and Practice Exercise 1.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 3:
Literature
Review
(continued)

Where to Look for Information

- Check the Learning Resource Center and Local Libraries

  - The Learning Resource Center (LRC) collection, which focuses on works related to the fire service, is available both at in-person visits while you are on the NFA campus, and through interlibrary loan through your local library when you return home.

  - Lists of the holdings of the LRC and other libraries also are available online. You can search them by subject or by keywords related to your topic.

- Use Online Search Engines

  - Online search engines can provide information on almost any topic. If you don't find information you are looking for through one search engine, try the others. Some useful search engines are:

  - http://www.google.com

  - http://www.excite.com

  - http://www.lycos.com

  - http://www.hotbot.com

  - http://www.altavista.com

  - http://www.alltheweb.com

  - http://www.yahoo.com

Tip: Be organized. Don't lose track of your sources. As you locate sources related to your report, assign each source to one of your research questions.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

	Self-study check Now go to Practice Exercises 2 and 3 in the Workbook to practice using these sources.

Step 3:
Literature
Review
(continued)

Evaluate Sources Carefully

Use judgment in selecting sources to include in your literature review. For each source you identify, ask

- Does this relate to one of my research questions?

- Does this author present facts in an unbiased and well-documented manner? (For example, if the author is a vendor of diversity training seminars, you need to determine whether this is an objective source.)

- How current is the information presented? This will be especially important if your study involves current technology. If you are doing historical research, it will be important that it is within the timeframe of your study.

- How comprehensive is the information? Does the author address only one aspect of the problem? For example, in discussing recruitment, does the author describe only programs that focus on recruiting women, when recruitment of minorities is also a key concern?

- Is this article excerpted from a more comprehensive work? If so, go to the original works to get a deeper understanding of the author's views.

- Generally, current sources are five years or less from the time of being published.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 3:
Literature
Review
(continued)

Guidelines for Note Taking

As you conduct your literature review, use your time wisely. Bring index cards or your computer to the library and take careful notes of the sources you will want to discuss in your ARP. Document each source so that you can locate it again, or so that you can order it by interlibrary loan.

Write down this information, or enter it into a template on your computer:

- Author's name

- Type of publication (book, magazine, journal, ARP)

- Title

- Publisher, date, and location of publication

- Page number(s) for information you will want to cite

- Volume number if the source is a periodical

- Web address if you located the information online.

Write some brief notes that summarize critical points made by the author that you want to discuss in your literature review.

How to Discuss Your Sources

Now, review the references you have identified. Discard those that are not actually relevant to your study. Some researchers will duplicate the same findings as others. In this case, don't discuss each one. Instead, summarize them in a statement, such as:

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

**Step 3:
Literature
Review**
(continued)

Several studies found that efforts to recruit ethnic minorities into the fire service were not cost effective because they did not achieve their recruitment targets (Jones, 1999; James, 2000; and Burns, 1998).

Now, organize and summarize your references in a meaningful way. If different authors present conflicting opinions, discuss their conclusions and suggest an explanation for the differences of opinion.

For example, suppose that the three imaginary studies cited above reported that programs to recruit ethnic minorities were not cost effective; but another study disagreed. Contrast these different findings and explain the differing opinions in a statement like the following:

Research by Burns (1998), Jones (1999), and James (2000) on the cost effectiveness of programs to recruit ethnic minorities into the fire service found that these programs were not cost effective. However, Smith (1988) found that such programs were cost effective when they included outreach to schools and school counselors in the community.

How to Use Quotations (Review APA p. 117 through p. 122)

If you identify quotations you may want to use, copy them **exactly** as they appear in the text, and include the page where they appear. This is very important! Whenever you quote information in your ARP, you must give credit to the original author.

Quotations of less than 40 words can be included in the text in quotations. Longer quotations are indented in a block, and double-spaced. (See Module 5 for directions on citing sources throughout the ARP text.)

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 3:
Literature
Review
(continued)

The sources of figures and tables also must be cited. If they are from copyrighted publications, you will also need to request permission to use them.

> *Tip:* Be very careful to give credit to the author of any material you use in your ARP. If you represent material by another author as your own, you will leave yourself open to a charge of plagiarism, which will result in your being disqualified for the EFOP.

Use direct quotations sparingly in your ARP text. Only use a direct quotation if it is impossible to paraphrase the author's meaning. The purpose of the ARP is for you to draw original conclusions from research. Your literature review should provide the essence of what others have reported, and then contrast and compare different views. Overuse of quotations suggests that the author is unable to understand and interpret the sources quoted.

> *Tip:* Overuse of quotations has been a serious problem in many ARP's and has contributed to low scores and rejection by evaluators.

Remember summary statements, at the end of Literature Review or after each research question literature, on how the findings/observations of others influenced your project.

> *Tip:* Do not discuss in your Literature Review how you carried out the review.

Evaluation Criteria
- **Sufficiently comprehensive.**
- **Findings of others reviewed.**
- **Summary statements (concluding summary paragraph[s] at the end of Literature Review) provided on how the findings/observations of others influenced the project.**
- **Current source.**

Self-study check
This would be a good time to review, using Job Aid 1 and Self-Check 6 in the Workbook.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 4:
Procedures

The procedures you follow in carrying out your research will depend on the type of research method you are using, but whichever method you use, your Procedures section must explain how you conducted your research and how it led to the final results of your study. **You must describe your procedures in enough detail so that other researchers could replicate your project.**

Your procedures section must explain what you did, when, and who was involved. **You must describe how you are going to answer each of your research questions.**

The types of research procedures include, but are not limited to, the following:

- Interviews

- Personal Observations

- Surveys

Tip: **Do not discuss results in your Procedures section. They belong in the Results section of your ARP.**

Conducting Interviews

- If you conduct interviews, your procedures section must explain…

    - Who you interviewed.

    - How you selected interviewees.

    - When and where the interviews took place.

    - What questions you asked.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 4:
Procedures
(continued)

- Before the interview remember that personal interviews are time-consuming and inconvenient, so plan them carefully.

  - Develop a list of key questions related to your research questions (questions would be in an Appendix to your ARP to permit replication). Try them out on two or three people; to be sure your questions will give you the information you need.

  - Select interviewees for a specific reason; for example, they are acknowledged experts in your problem area; they are primary sources of needed information, etc.

  - Call or write in advance to request the interview; explain why you are doing the interview, how much time it will take, and how their responses will be used. Assure them that the information they provide will be kept confidential.

  - Establish a specific time and place for the interview. Identify a contact point at the site. Get that person's telephone number.

- During the Interview

  - Repeat that the interviewee's responses will be kept confidential.

  - Record all questions and answers accurately and completely. (If the interviewee consents, taping the interview saves time and ensures accuracy.)

  - Don't ask "leading questions," or questions to which you think the interviewee may not respond honestly.

  - Be careful not to reveal your own opinions or ideas, because interviewees have a tendency to want to please the interviewer.

- After the interview analyze your data as soon after the interview as possible. Document what you learned and how it relates to your study questions.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 4:
Procedures
(continued)

Conducting Personal Observations

- If you decide to conduct personal observations to collect your research data, your Procedures section must explain the following

    - Who or what you observed.

    - Why you decided to observe these activities.

    - When and where the observations took place.

- Before the observations

    - Decide on the procedures you want to observe.

    - Develop a data collection form that identifies the procedure being observed, and has space to describe the location, the data and time, and what you observed. This needs to be included in your ARP.

- During the observations

    - Either observe all possible time periods or select representative time periods at random.

    - Record observations at the time the behavior occurs, don't rely on your memory to record them correctly afterwards.

    - Videotape to save time and ensure accuracy, but videotape only if being on camera does not influence the persons being observed. Never videotape without the consent of the persons being taped, unless it's a **public** behavior or event. Explain to those being observed exactly how your videotape will be used.

> *Tip:* If you videotape, make a voiceover to identify the items you planned to document on your data collection form.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

**Step 4:
Procedures**
(continued)

- Personal observation is particularly susceptible to observer bias. As an observer you can and must minimize such bias by:

  - Maintaining strict objectivity.

  - Reporting all behaviors, not just those that you would prefer to see.

  - Guarding against a "halo effect" (don't let your initial impressions affect subsequent observations).

  - Being as unobtrusive as possible, because those being observed often have a tendency to behave according to perceived observer expectations.

- After the observations

  - Analyze your data as soon as possible.

  - Document where you went, what you saw, and how it relates to your research questions.

Conducting Surveys

- If you conduct a survey to gather data, the Procedures section of your ARP must explain

  - The purpose of the survey

  - How you developed your survey

  - How you selected the survey sample size

  - Where and when you conducted the survey

  - How you selected the people to survey (the survey respondents)

  - How many respondents returned the survey

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 4:
Procedures
(continued)

- Developing the Survey

  - Define the purpose of the survey in explicit terms. Make a list of things you want to find out.

  - Write a draft version of all the questions you plan to ask. Questions can be…

    -- Open-ended--Allowing respondents to answer in their own words, give personal opinions, etc. (What is your opinion of …?)

    -- Closed-ended--Forcing a direct answer (yes/no or multiple choice). (How long have you worked in…?); or

    -- Forced choice--A multiple choice response which does not include "no opinion" or "not applicable." (How many women work here? 1 to 5, 6 to 10, 10 to 15, none)

Tip: Closed-ended and forced choice questions are preferable because they lead to uniformity of results and ease of analysis. You should include some open-ended questions, but too many can be problematic. Interviews are more appropriate for open-ended questions.

  - Writing your survey questions:

    -- Use clear, simple language. Avoid jargon.

    -- Avoid "loaded" or "biased" questions (questions which lead respondents to a desired response).

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 4:
Procedures
(continued)

Most surveys are conducted anonymously; the respondent's name is not requested on the form. You can ask respondents about the size of their organization, department, etc.; but limit such requests to what is required in order to analyze the results. This information should not make it possible to identify the respondent.

Test the draft survey on a few potential respondents in order to revise ambiguous or unnecessary questions.

- Selecting the Survey Sample:

A sample is a part of the total population from which you will derive your survey data. Since your sample must be representative of the total population, you need to define the total population before selecting your sample.

For example, if you are studying diversity programs in urban fire organizations in the northeastern United States, and you want to survey the fire chiefs in those organizations, you will need to select a random sample of these fire chiefs to whom to send your survey.

If your sample is really representative of the total population of fire chiefs, then the conclusions you reach about your sample most likely will be applicable to the total population.

You can use the table in Figure 5 to decide on an appropriate sample size for your survey. Expect at least a 20-percent non-response rate and increase your sample accordingly. For example, if there are 100 fire chiefs in the area of interest, you would need to survey 80, selected at random, to ensure a 95 percent confidence level. However, to account for the 20 percent non-response rate, you would need to survey 96 fire chiefs.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Figure 5. Table for determining needed size of a randomly chosen sample in order to assure 95 percent confidence level

**Step 4:
Procedures**
(continued)

N	S	N	S	N	S
10	10	220	140	1,200	291
15	14	230	144	1,300	297
20	19	240	148	1,400	302
25	24	250	152	1,500	306
30	28	260	155	1,600	310
35	32	270	159	1,700	313
40	36	280	162	1,800	317
45	40	290	165	1,900	320
50	44	300	169	2,000	322
55	48	320	175	2,200	327
60	52	340	181	2,400	331
65	56	360	186	2,600	335
70	59	380	191	2,800	338
75	63	400	196	3,000	341
80	66	420	201	3,500	346
85	70	440	205	4,000	351
90	73	460	210	4,500	354
95	76	480	214	5,000	357
100	80	500	217	6,000	361
110	86	550	226	7,000	364
120	92	600	234	8,000	367
130	97	650	242	9,000	368
140	103	700	248	10,000	370
150	108	750	254	15,000	375
160	113	800	260	20,000	377
170	118	850	265	30,000	379
180	123	900	269	40,000	380
190	127	950	274	50,000	381
200	132	1,000	278	75,000	382
210	136	1,100	285	100,000	384

From: Krejcie, R. V. and D. W. Morgan. "Determining sample size for research activities." *Educational Psychological Measurement*, 1970, 30, 607-610.

Note: *N* is total population size; *S* is sample size.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 4:
Procedures
(continued)

- Distributing Your Survey: Whether you mail your survey or distribute it in person, attach a cover memo that includes:

  - Your name, title, and organization

  - The purpose of the survey

  - Instructions for completing and returning the survey.   (Include a stamped self-addressed envelope if you mail your survey.)

  - A reasonable, but specific, return date

  - A statement of your willingness to share the results of the survey, if the respondent wishes

  - Assurance of confidentiality and anonymity.

Self-study check
This would be a good point to review, using Self-Check 7 in the Workbook.

Procedures to Use with Different Research Methodologies

The type of data collection procedure you use will depend on your research methodology.

- Historical Research

  - Collect all written documents related to the problem. These could include standard operating procedures (SOP's), policies, regulations, memos, correspondence, reports, records, minutes of meetings, etc., for the period you are studying.).

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 4:
Procedures
(continued)

    - Compile a chronological series of events that led up to the present problem.

    - Identify factors/effects/causes related to each event and to the present problem.

    - Interview and/or survey primary sources who have first-hand knowledge of past events related to the problem.

    - Analyze, organize, and synthesize all collected data and show how they relate to your research purpose and address your research questions.

    - Draw conclusions about the past and formulate generalizations about the present and/or future.

- Descriptive Research

    - Decide on which technique(s) you want to use to collect your data. These can include surveys, personal interviews, and/or personal observations.

    - If you should choose to limit your research procedures to personal interviews, you must be very careful to ensure an adequate and acceptable research effort. Multiple, in-depth interviews would be required. Rationale and justification must be provided in the Procedures section of the report for limiting your study in such a way.

> *Tip*: In general, procedures that are limited to interviews alone will not be acceptable in ARP research.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 4:
Procedures
(continued)

- Conduct selected data collection activities (interviews, surveys, personal observations), following the guidelines outlined in this Study Guide. **In general, procedures that are limited to interviews alone will not be acceptable.**

- Organize, analyze, and document your collected data in detail.

- Evaluative Research

  - Define the parameters of the evaluation study: What exactly do you wish to evaluate?

  - Identify specific criteria against which you wish to measure the item being evaluated. Ask…

    -- What are specific, key indicators of success, effectiveness?

    -- What is it supposed to look like if it's working right?

  - Concentrate on defining objective, measurable, meaningful factors.

  - Develop a plan for measuring each evaluative criterion objectively and thoroughly.

  - Conduct the study; remain objective.

  - Analyze and evaluate all collected data in order to reach a final evaluative conclusion.

- Action Research

  - First, recheck your problem statement for clarity and comprehensiveness.

  - Establish a broad goal. Your purpose statement usually will be an adequate goal statement.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 4:
Procedures
(continued)

- Conduct a situational analysis to determine the factors that are causing or contributing to the problem. Ask…

-- What existing situational forces are likely to assist me in achieving my research purpose?

-- What existing situational forces are likely to impede achieving my research purpose?

-- How can I eliminate factors that cause or contribute to the problem?

-- How can I capitalize on factors that may assist in solving the problem?

- Set objectives: describe specific, measurable outcomes for each selected strategy.

- Develop step-by-step action plans for accomplishing each objective.

- Implement your plans.

- Monitor your progress to ensure timely completion of your goal.

- Evaluate outcomes.

Evaluation Criteria

- **Procedures sufficiently and clearly delineated to permit replication.**
- **Procedures appropriate to achieve the purpose of the study.**
- **For surveys, definitions of total population included; if used, process for selecting samples described.**
- **Limitations noted.**
- **A Definition of Terms section included for any ambiguous concepts.**

Self-study check
This would be a good point to review, using Self-Check 8 in the Workbook.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 5: Results   In your Results section, **provide a clear and comprehensive narrative description of the findings of your research project**.

- First define specific answers to each of your research questions.

- If you conducted evaluative research, explain in considerable detail your final evaluative findings and conclusions.

- If your research included survey(s), personal interview(s), or personal observation(s), provide a detailed analysis of the data collected. For each question you asked, document all the responses given.

- If you conducted action research, you must describe, and include a copy of, the final product generated by your research effort.

- When data are particularly long and complex, only the narrative summary should be included in the Results section and detailed descriptions of all data should be placed in an Appendix.

Evaluation Criteria

- **Results/Findings clearly and concisely stated in narrative form.**
- **Detailed results of all procedures provided.**
- **Specific answers to all original research questions provided or explanation of whether or not original hypothesis was supported by results, as appropriate.**
- **Comprehensive analysis of the data included.**
- **Tables and figures clearly presented and labeled; appropriate data selected for presentation.**
- **Final product(s) of action research included as an Appendix.**

Tip: Results and findings must be presented in a logical and objective manner **without personal editorializing**. The Results section includes "just the facts." Do not include opinions, comparisons of findings, or arguments. These belong in the Discussion.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 6: Discussion

The Discussion section should be a comparison, analysis, and synthesis of your Results findings and the findings of others from the Literature Review section. It should show how the research and findings of others support or contradict each other **using extensive citations from the authors in your Literature Review**. There **cannot** be any authors that were not in the Literature Review or Results sections. It also should discuss unexpected findings. In this section, you have an opportunity to provide your personal interpretation and your organizational implications about the study results.

Evaluation Criteria
- **Relationship between the study results and specific findings of others discussed, using extensive citations from reference documents.**
- **Students' interpretation of the study results presented.**
- **Organizational implications of the study results clearly stated.**

Tip: Your Discussion section should not introduce any completely new data; it should only interpret data presented previously.

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

Step 7:
Recommendations

In this section, discuss your long- and short-term recommendations for your organization. **Recommendations should clearly be supported from Results**.

> *Tip*: If you are going to use seriation review APA p. 115 and p. 116, **do not bullet point.**

- What needs to happen next within your organization, based on your results?

- What changes do you recommend per the data presented in Results?

- What organizational benefits do you expect would result from the changes you recommend?

- If you recommend changes, how should they be implemented?

- What follow-up evaluation do you think would be appropriate?

- In conclusion, what **recommendations do you have for other researchers** who may wish to replicate some or all of your study?

Evaluation Criteria

- **Recommendations logically flowed from research finding.**
- **Recommendations were supported by the data presented.**
- **Recommendations related to the stated problem and purpose of the study.**
- **Recommendations provided for the student's organization and for future readers.**

Module 3: What Should I Include in Each Section of My Applied Research Project? (continued)

The Back Matter

- The Reference List

    Your Reference List will list every reference you cited in the text of your ARP, except for personal communications or other sources that your reader will not be able to locate.

    > *Tip:* Check your Reference List carefully to be sure that it contains every source that you mentioned in the ARP text, and no sources that you have not cited in text of your ARP. Since you have used the *APA Publication Manual* as a formatting reference, and not as a research source, do not include it in your Reference List.

    Start your Reference List on a separate page. Module 6 discusses the format of this list. (See APA p. 313 for sample)

- The Appendices

    Start each appendix on a separate page. Each appendix should have a label, e.g., Appendix A, and a title.

    Use the appendix to provide the reader with detailed information that would be distracting to read in the main body of your report. Include in your appendix such items as SOP's, checklists, large tables, survey questionnaires, cover letters and memos, protocols you used in conducting interviews or observations, etc. **If you did action research, you must include the product you developed.**

Self-study check
This would be a good point to review all the ARP process elements, using Self-Check 9 in the Workbook.

Module 4: What Sources of Information are Available to Help Me Successfully Complete the ARP, and How Should I Use Them?

ARP References and Guidance

Before you begin Module 4 of this Student Study Guide, be sure you have copies of the following resources:

The Executive Fire Officer Program Operational Policies and Procedures Manual, Revised October 1, 2005. This manual is available for download on the EFOP Web site at
http://www.usfa.fema.gov/training/nfa/efop/r123-pcm.shtm
You may also request a written copy from the USFA Publications Center by calling (800) 561-3356.

The Publication Manual of the American Psychological Association, 5th edition. You can purchase this manual in most major bookstores or online book outlets.

- *The EFOP Operational Policies and Procedures Manual*

    Critical policy information regarding your ARP is included in Section I of the *EFOP Operational Policies and Procedures Manual.* The September 2003 edition of the manual also includes *Applied Research Project Guidelines* in Section II. In an effort to avoid duplication and minimize student sources, all relevant information in Section II of the manual is included in this Student Study Guide. We encourage you to focus your attention only to Section I of the manual for the following information:

    - Standards of integrity that EFOs need to comply with in developing ARP's, p. I-10

    - Information on ARP evaluation and evaluation criteria, p. I-11

    - Information on the EFOP Outstanding Research Award, p. I-13

    - Reasons for dismissal from the EFOP, p. I-14

    - Information on the archiving and distribution of ARP's, p. I-14

    - College credit for ARP's, p. I-15

Module 4: What Sources of Information are Available to Help Me Successfully Complete the ARP, and How Should I Use Them? (continued)

**ARP
References and
Guidance**
(continued)

- The *American Psychological Association (APA) Publications Manual*

  The *APA Manual* was created originally to provide standards for authors of journal publications. However, because it contains a great deal of information that applies to the development of any research paper, it is now widely used in schools and universities, and by NFA. While some sections of the *Manual* relate specifically to preparing papers for publication, the *Manual* also includes a wealth of information that will be useful to you in preparing your ARP's.

  Why *APA*? Many students believe that the *APA* requirements overshadow the actual content in a research paper. Consider for a moment, being in the position to find information or evaluate the effectiveness of hundreds of research projects without a standard look and feel. Every document would look different to the reader, and in many cases some excellent research may go unrecognized due to the perplexity of so many different formats.

  The *APA Manual* will help you create a document that is standardized in a manner that brings out the best in your research effort. Essentially, by using *APA*, the structural design of your research project is already complete. You are free to fill in the structure with your research content, and be relatively certain that everyone who references your work will be able to focus on your content rather than navigating through your project to find the content.

  As you develop your research project, be sensitive to the fact that your evaluators want you to succeed. *APA* deficiencies that are identified by your evaluators may seem trivial or inconsequential to you. However, most *APA* deficiencies result because evaluators are having difficulty focusing on your research. The credibility of your research is directly proportional to your ability to organize and communicate effectively.

  You will be primarily concerned with Chapters 1, 2, 3, and 4. You also will need to refer to Appendix D, only if you need to cite legal or legislative sources in your research.

Module 4: What Sources of Information are Available to Help Me Successfully Complete the ARP, and How Should I Use Them? (continued)

ARP References and Guidance (continued)

- Chapter 1: Content and Organization of a Manuscript. The content and organization of your ARP is detailed previously in Module 3. For the purposes of the NFA and EFOP, there are a few exceptions to the *APA* format. For example, the NFA requirement for the Table of Contents is not an *APA* requirement. We encourage you to follow the format described in Module 3, and refer to the *APA Manual* for additional guidance.

- Chapter 2: Expressing Ideas and Reducing Bias in Language. This chapter will help you with writing style, grammar, and guidelines to reduce bias. Each of these components contributes significantly to the credibility of your work.

- Chapter 3: American Psychological Association Editorial Style. This chapter will help you apply a standard set of rules for punctuation, spelling, capitalization, italics, abbreviations, headings, quotations, numbers, etc.

- Chapter 4: Making a Reference List. This chapter provides guidance on how to cite references of all types in your Reference List, including both print and electronic media. Module 7 of this self-study course discusses some common examples, but the information in the *APA Manual* is much more extensive. **There is a very useful index in Chapter 4, pages 232-238, to examples of all types of reference list citations. The reference examples are shown on pages 239-284.**

Self-study check
This would be a good point to review, using Self-Checks 10 and 11 in the Workbook.

Module 5: How Should I Cite Sources in the Applied Research Project Text?

This module introduces the subject of text references, with some common examples.

The *APA Manual*, Chapter 3, p. 207-214, explains how to cite sources as you discuss them in your ARP, including personal conversations, personal letters, and other sources that may not be available to readers of your report.

Citations
Citations in the text should give the reader enough information to locate the full reference in your Reference List. There are two basic ways to cite references in text:

- You can make the author(s) the subject of the sentence, as in this example:

    Hall (1996) says that the civilian fire death toll for the period from 1989 to 1993 averaged 4,887 deaths per year.

- You can make a statement and identify the author(s) at the end of the statement. For example:

    The civilian fire death toll for the period of 1989 to 1993 averaged 4,887 deaths per year (Hall, 1996).

Tip: **If you cite an institutional source, such as the Federal Emergency Management Agency (FEMA), spell out the full name the first time it is used, followed by the acronym in brackets, i.e., (Federal Emergency Management Agency [FEMA], 1996.) All references to this source after the first will use the acronym only (FEMA, 1996).**

Module 5: How Should I Cite Sources in the Applied Research Project Text? (continued)

Quotations in Text

- If you quote an author directly, give the author's name, the year, and the page number on which the quotation appears. For example:

  He stated, "The 'inflexible-adaptable consequence' … vanished when behaviors were researched with such a format" (Smith, 2004, p. 76), although he did not disclose which behaviors were researched.

  OR

  Smith (2004) discovered that "the 'inflexible-adaptable consequence,' which had been established in earlier research, vanished when behaviors were researched in the such a format" (p. 153).

- If your quotation is longer than 40 words, omit the quotation marks, but indent the entire quotation in your text.

- **Review the APA manual on quotations from p. 117 to p. 122.**

Tip: Quotations long enough to require blocking are necessary only in rare instances, for instance, to quote from a legal document that you cannot paraphrase. **Overuse of block quotations will detract from your paper.**

Module 5: How Should I Cite Sources in the Applied Research Project Text? (continued)

Electronic Sources

Most articles retrieved online are exact duplicates of their print versions. You can use the same reference style as for the print article. However, if you read the article only in its electronic form, add in brackets after the article title [Electronic version].

If you do not see a page number on an electronic reference, insert a paragraph number, instead of a page number, using either the paragraph symbol ¶, or the abbreviation "para." to indicate the location of your citation (see APA p. 120).

Most printers insert page numbers when the document is downloaded, but different printers may paginate differently.

> *Tip*: To access the ¶ symbol in Microsoft Word™, click on Insert, choose Symbol; click on the Special Characters block, scroll to and click on the paragraph symbol.

Personal Communications (See APA p. 214)

Personal interviews, telephone conversations, letters, memos, and other communications that will not be recoverable by your readers are not included in your Reference List, but you need to cite them in your text. Give the initials and the name of the communicator, and include a date. For example:

J. B. Brown (letter, April 1, 2000) said that fire deaths are avoidable.

Self-study check
This would be a good point to review, using Self-Check 11 in the Workbook.

Module 6:   How Should I Cite Sources in the References Section of the Applied Research Project?

The last item in your ARP is the Reference List. In this section, you must list all the published materials you cited in the text of your ARP. This module contains some basic rules that you are certain to need.

Tip: Remember that the Reference List should contain only references that readers can recover. Personal communications, such as letters, memos, and informal electronic communications are referenced only in the text of the ARP.

Basic Rules   The *APA Manual* contains a comprehensive list of rules, some of which also may apply to your ARP.

- Double-space your reference list entries (see APA p. 313).

- Indent all lines after the first line in an entry (hanging indent).

*Tip***:** If you are using Microsoft Word™, go to Format, click on Paragraph, and then scroll to Hanging in the Special box and click on it. The lines after the first line will indent automatically.

- List references in alphabetical order by authors' last names.

- If you cite two references by the same author, arrange them by date of publication, with the earliest dated reference first. If both references have the same publication year, arrange them by the first letter of the title and add "a", "b", etc. after the author's name**. For example, Jones, A.B. (2003a). Jones, A.B. (2003b). Use these dates in the text citation as well.**

- If an author is a sole author in one entry and, in another citation is first author in a group of authors, list the sole author reference first.

Module 6: How Should I Cite Sources in the References Section of the Applied Research Project? (continued)

Basic Rules
(continued)

- If the author of a publication is an agency, association, etc., list the work alphabetically, by the first significant word, for example, for National Fire Academy, alphabetize by "National." Do not use abbreviations, such as NFA.

- If a work has no author, alphabetize it by the first significant word in the title.

Formats for books, magazines, newspapers, and journals are slightly different. **Refer to Chapter 4 of the *APA Manual* for examples**. Here are a few basic guidelines:

- With reference list for newspapers, use p. (for page) or pp. (for pages).

- With reference list for journals, use only the number, without "p."

- Include the State or country in an entry only if it is not obvious. For example, New York does not need a State. London does not need the country. But for less-known publication addresses, include the State, e.g., "Madison, WI."

Source Citations

Here are some of the most commonly cited types of sources. If your source type is not mentioned below, check the index on p. 232-238 of the *APA Manual* to find directions and examples.

- Print Sources

    For an article in a magazine or journal, use this format:

    Author last name, Author initials. (Year of publication). Title of article. *Title of periodical, volume number*, page number or numbers.

Module 6: How Should I Cite Sources in the References Section of the Applied Research Project? (continued)

Source Citations (continued)

Example:

Jones, J. J. (1994). Responses to fire alarms. *Fire Engineering, 22*,

    12-14.

For an article in a newspaper, use this format:

Author last name, Author initials. (Year, month, day). Title of article. *Name of newspaper*, page number(s).

Example:

Jones, J. J. (1994, October 30). Fire alarms. *The Washington Post*, p. A2.

    If the article is on different pages, give all pages, for example,

    pp. A2, A3.

For a book, use this format:

Author last name, Author initials. (Year of publication). *Title of book*. City of publication: Publisher.

Example:

Jones, J. J. (1994). *Fire safety*. New York: McGraw-Hill.

For an edited book, use this format:

Editor(s)' last name(s) and initials (Eds.). (year). *Title*. City of publication: Publisher.

Example:

Jones, J.J. & Brown, A.A. (Eds.). (1990). *Children and fire.* New York:

    Harpers.

Module 6: How Should I Cite Sources in the References Section of the Applied Research Project? (continued)

**Source
Citations**
(continued)

For a manual with no author, use this format:

Title of manual. (year). Place of publication: Publisher.

Example:

Introduction to Performance-based Building Design (2000). Bethesda,

    MD: Society of Fire Protection Engineers.

For building codes, statutes, and ordinances, use this format:

Give the official name of the act and the year of the act. Include the source
and section number of the statute, and in parentheses give the publication
date of the statutory compilation, which may be different from the year in
the name of the act.

Name of Act, Volume Source, section number (year).

Example:

Fire Alarms Act of 1999, 45 U.S.C. § 924 (1999).

**For reports or standards from private organizations, such as NFPA,
use this format:**

Give the name of the institute or association, the date, the title of the
document, appropriate document number in parentheses, city of publication,
and author.

Example:

National Fire Protection Association. (2000). *Standard for Rescue*

    Technician (NFPA 1006). Quincy, MA: Author.

Module 6: How Should I Cite Sources in the References Section of the Applied Research Project? (continued)

**Source
Citations**
(continued)

- Electronic Sources including databases, online journals, Web sites or Web pages, newsgroups, Web- or email-based discussion groups, and newsletters.

  For an online periodical, use this format:

  Author last name, Author initials. (year). Title of article. *Title of periodical, Vol. #,* page #. Date retrieved from source

  Example:

  Jones, J. J. (1994). Fire prevention. *Fire Safety, 22,* 12. Retrieved June 10, 1996, from http://www.nfa.gov

  Tip: Note that an electronic source will not end with a period.

Module 7: Guidance on Applied Research Project Manuscript Preparation

You need to follow these conventions in preparing your ARP:

Page Length   Your ARP should be between 20 and 30 pages, excluding the Reference List and the Appendix. However, if the topic is very complex, the ARP may exceed 30 pages.

Page Layout
- Print on 8-1/2" white paper, on one side only.

- **No text is bolded!**

- Double-space all text; including any block quotations and the reference list.

- Left justify text, with one-inch margins on all sides.

- Preferred types are Times Roman 12-point font or Courier 12-point font, including in the header and the Reference List.

- Paginate in right hand corner, 1/2" from the top, flush right, using Arabic numbering on all pages, including the Title Page.

- Insert a header, on the same line with the page number. The header will appear on each page of the paper, including the Title Page. The header summarizes the title in two or three words (See APA p. 306).

- Type the title, in initial caps, on the first page of the text (after the Title Page and the Certification Statement), centered followed by main body of the paper section, Introduction. See following sample:

<div align="center">

Individual Distinction in
Biprototype Processing and Word Recall

Introduction

</div>

Headings   See sample paper in APA starting on p. 306.

Module 7: Guidance on Applied Research Project Manuscript Preparation (continued)

Additional ARP Criteria

The following components are not part of the main body of the ARP, but are part of the 10 separate components being evaluated (see Checklist).

Content

Accurate facts must be presented in terms of principles, theories, and procedures used in the ARP. EFOP curriculum will be the foundation for evaluating content.

Evaluation Criteria

- **Theories, principles, and procedures presented and used properly.**
- **Information and data accurate and up-to-date.**

Writing

This Student Study Guide and the APA will the sources to aid you in accomplishing the Writing component.

Evaluation Criteria

- **Correct grammar, punctuation, spelling, sentence structure, and typing/editorial style.**
- **All required sections of paper included.**
- **Reference list and in-text references documented properly using APA Guidelines.**
- **Title reflects nature of the study; correct title page format followed.**
- **Table of Contents includes all major headings; a list of tables was provided if more than one table was used; Appendices were listed and defined.**
- **Certification statement signed and included.**

Conclusion

Summary   As an Executive Fire Officer, you must be a problem solver. You will be dealing with issues such as setting budget priorities in a time of scarce resources; making service availability decisions, based on the evolving needs of your community; and, determining which of competing technologies will improve the productivity of your workforce, and what training and development will be required to implement each potential choice. In solving such problems, you will need to work with internal teams in your department, as well as with the community decision makers who must approve your problem solutions.

Developing the four ARP's required by this program will give you the ability to identify and correctly define different types of problems, collect the data you need to understand the problems well, draw conclusions based on your analysis of the data you collected, and use your findings to develop recommendations to solve the problems. You also will learn to use research data to convince decision makers in your community of the advantages of your professionally developed problem solutions.

In addition, the research you carry out through ARP's not only will be valuable for your own work environment, but also will allow you to contribute in a meaningful way to the existing fire service body of knowledge, and thus help your fellow EFOs who face similar problems.

This Self-Study Guide has given you some basic analysis and data collection tools. The *Executive Development* resident course instructors will show you how to apply these tools with confidence to carry out your applied research projects.

Final Exam   Complete your EFOP Research Self-study Course exam and return it to the USFA staff member identified in the pre-course instruction letter. Your results and specific feedback will be e-mailed to you within 3 working days upon receipt of your exam.

You will be required to achieve a score of at least 70 percent on the exam prior to beginning the *Executive Development* course. You will be notified of your results and given the opportunity to resubmit your exam if you do not achieve 70 percent on your first attempt.

Appendix

CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: _____